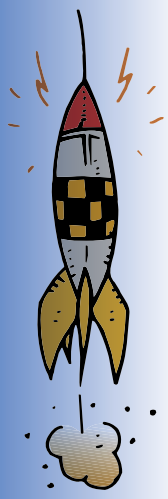
National Aeronautics and Space Administration

Volume 6
Issue 4

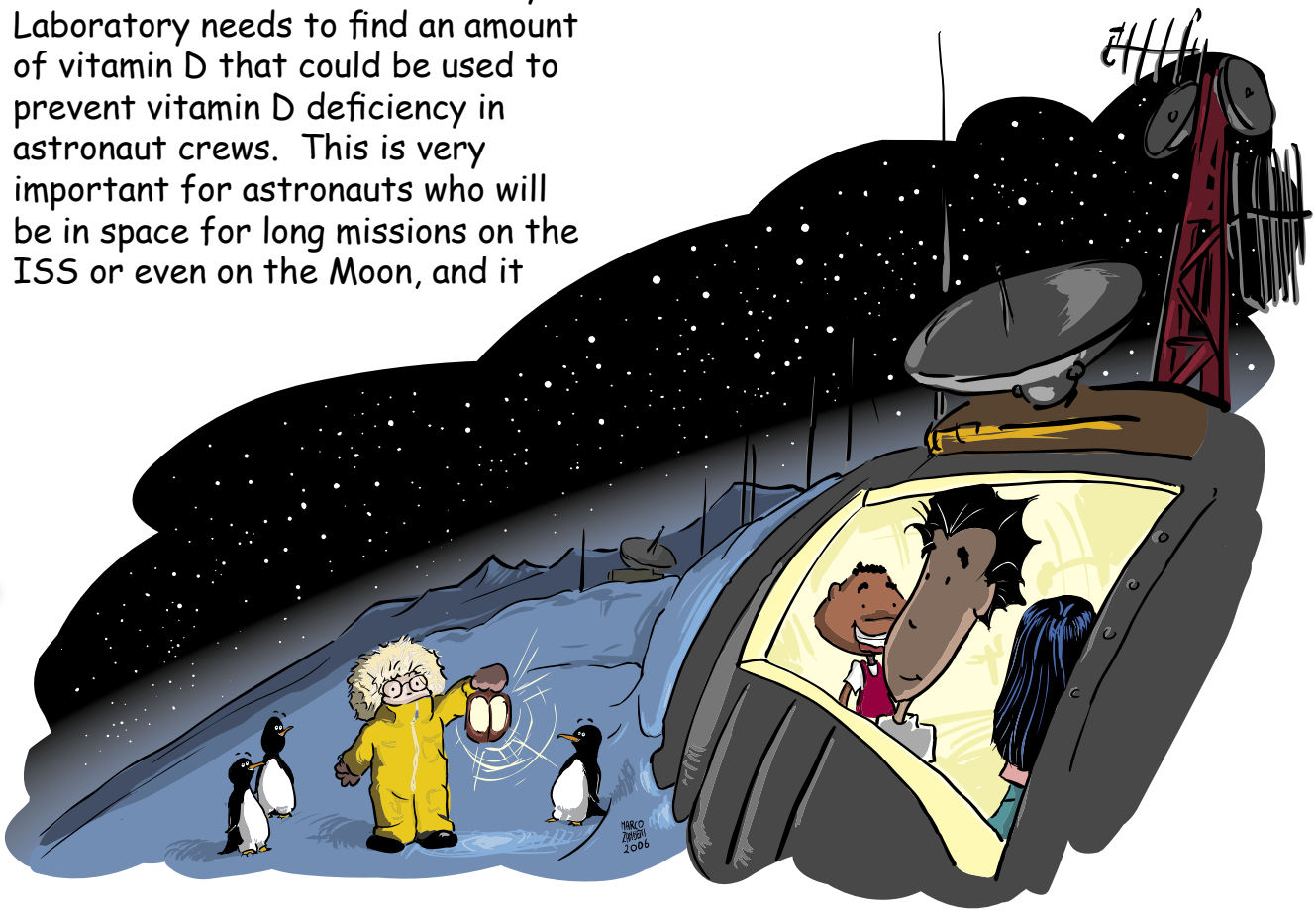
Polar Science



Vitamin D is important for healthy bones. Vitamin D is found in some foods, and it is also unique because it can be made in our skin when exposed to the sun. Astronauts are not exposed to the sun during space flight, because the windows of the space vehicle block the specific types of rays that help make vitamin D. The foods on board a spacecraft do not contain enough vitamin D to make up for the lack of sunlight. Even when they are taking extra vitamin D, International Space Station (ISS) crew members often have a lower amount of vitamin D in their blood after flight than they did before flight.

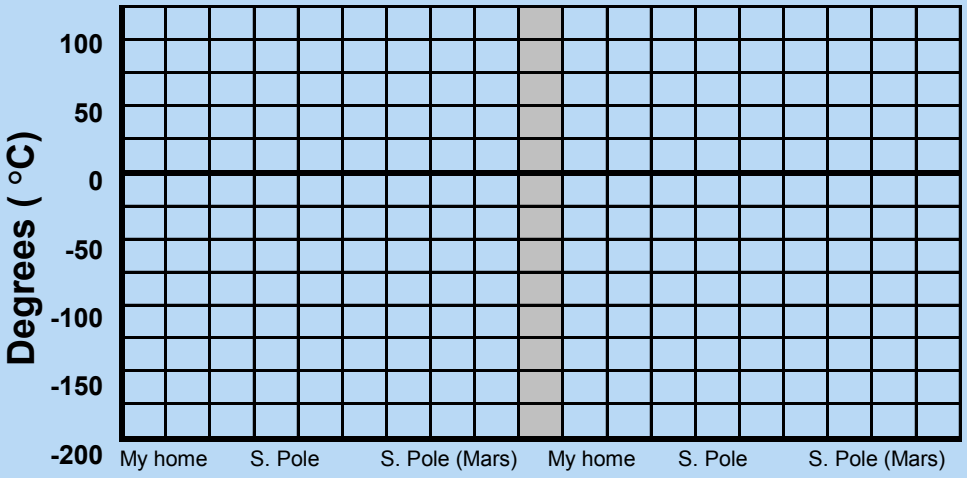
NASA's Nutritional Biochemistry Laboratory needs to find an amount of vitamin D that could be used to prevent vitamin D deficiency in astronaut crews. This is very important for astronauts who will be in space for long missions on the ISS or even on the Moon, and it is even more critical for missions to Mars.

Past issues of the Space Nutrition Newsletter have highlighted analogs, or ways to simulate space flight for studies on Earth. To study vitamin D, and the lack of sunlight, we travel literally to the end (or the bottom) of the Earth! The amount of sunshine a person in Antarctica receives during the winter, which is zero, is similar to the amount in space flight. The Nutritional Biochemistry Laboratory is performing a study this year in Antarctica, where we will be able to estimate how effective different levels of supplemental vitamin D would be in space.



Space Nutrition

Thea's Corner...



Brrrr! Just how cold is it at Earth's South Pole? In the summer it is -30°C, and it is -70°C in the winter. How does this compare to average summer and winter temperatures where you live? (www.weather.com) Make a bar chart comparing temperatures at the South Pole and where you live. Be sure to label each bar.

For some added fun, add the average temperatures at the South Pole on Mars to your graph (-70°C in the summer and -120°C in the winter).

Did You Know?

- 98% of Antarctica is covered by a thick layer of ice. The average thickness of the ice sheet is 7,200 feet.
- Each year, more than 800 scientists from all over the world journey to different research stations in Antarctica to conduct all types of research to study volcanoes, fish that don't freeze, fern fossils, stardust, ancient bacteria, and more.
- No one country owns Antarctica. The Antarctic Treaty, which has been signed by 45 countries, reserves that area as a zone for the peaceful conduct of research.
- Vitamin D deficiency, long thought to be rare, is turning up in kids in America. Be sure to get enough vitamin D in your diet or to get out in the sun!
- Milk and orange juice may be fortified with vitamin D, meaning that vitamin D is added to them. This makes them good dietary sources of vitamin D.

Word of the Month

hyperbaric

Can you guess what this word means? Look it up in the dictionary and see if you were right. We'll have more on this next month!

Web Challenge:

This year marks the 45th anniversary of the first American manned space flight to orbit the Earth. In the web links below, you can learn all about this remarkable feat, and even conduct a virtual interview with some of the original astronauts.

www.nasa.gov

http://www.nasa.gov/mission_pages/shuttle/main/index.html

Check out Thea's Bonus Page, experiments you can try, and even stuff you may have done at our website:

http://hacd.jsc.nasa.gov/resources/kid_zone.cfm

email: Space.Nutrition.Newsletter@nasa.gov